

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of	)	<b>MAIL STOP</b>
Franz-Josef Koerber	)	<b>APPEAL BRIEF - PATENTS</b>
Application No.: 10/568,751	)	Group Art Unit: 2837
Filed: February 21, 2006	)	Examiner: David S. Luo
For: APPARATUS FOR ACTUATING	)	Appeal No.: _____
AN ELECTRICAL SWITCHING	)	
DEVICE	)	

**APPEAL BRIEF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This appeal is from the decision of the Primary Examiner dated March 26, 2010 finally rejecting claims 1-11 and 13-22, which are reproduced as the Claims Appendix of this brief.

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The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

## Table of Contents

I.	Real Party in Interest .....	1
II.	Related Appeals and Interferences .....	1
III.	Status of Claims .....	1
IV.	Status of Amendments .....	1
V.	Summary Claimed Subject Matter .....	1
VI.	Grounds of Rejection to be Reviewed on Appeal .....	2
VII.	Argument .....	3
VIII.	Claims Appendix.....	5
IX.	Evidence Appendix.....	5
X.	Related Proceedings Appendix .....	5
XI.	Conclusion.....	6

I. Real Party in Interest

ABB AG is the real party in interest, and is the assignee of Application No. 10/568,751.

II. Related Appeals and Interferences

The Appellant's legal representative, or assignee, does not know of any other appeal or interferences which will affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of Claims

A. There are 21 total claims currently pending in the application.

B. Current status of the claims

1. Claims canceled: Claim 12
2. Claims withdrawn from consideration but not canceled: None
3. Claims pending: 1-11 and 13-22
4. Claims allowed: None
5. Claims rejected: 1-11 and 13-22
6. Claims on appeal: 1-11 and 13-22

IV. Status of Amendments

No Amendments were filed subsequent to the final Office Action dated March 26, 2010.

V. Summary Claimed Subject Matter

An exemplary apparatus actuating a high voltage power breaker that includes a first lever 16 that is fixed to a drive shaft 18 of an electrical motor (page 6, lines 4-6). The first lever 16 is fixed transversely with respect to the drive shaft 18 and acts on a second lever 12 via a connecting rod 14 (page 6, lines 6-9). The second lever 12 is fixed transversely to a rotating shaft 10 of the high voltage power breaker (page

6, lines 6-9). An actuating level 42 is fixed transversely to the rotating shaft 10 and actuates a moving contact piece of a switching chamber 40 via an insulating rod 44 (page 6, lines 10-14). The drive shaft 18 rotates about a central axis that is parallel to the central axis about which the rotating shaft 10 rotates (page 6, lines 17-21; Fig. 1).

The table that follows maps Appellant's independent claims to those portions of the disclosure that support the recited feature.

Claim	Element	Support
1	An apparatus for actuating an electrical switching device high-voltage power breaker having at least one moving contact piece, the at least one moving contact piece being driven via a rotating shaft that rotates about a first axis,	col. 6, lines 1-15; Fig. 1
	wherein an electric motor having a rotating drive shaft that rotates about a second axis, which can be coupled to the rotating shaft for the switching device by means of a gear mechanism, is provided for the purpose of driving the rotating shaft to switch the switching device high-voltage power breaker on and off,	page 6, lines 1-15; Fig. 1
	wherein the first axis of the drive shaft runs parallel to the second axis of the rotating shaft in a common horizontal plane.	page 6, lines 17-21; Fig. 1

#### VI. Grounds of Rejection to be Reviewed on Appeal

Claims 1-22 stand rejected under 35 U.S.C. §103(a) for alleged unpatentability over *Marin-Pache* (U.S. Patent No. 6,506,990) in view of *Byers* (U.S. Patent No. 6,693,247).<sup>1</sup>

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<sup>1</sup> The listing of rejected claims (1-22) is incorrect as claim 12 was canceled by Appellant in an Amendment filed on January 13, 2010.

VII. Argument

**Independent claim 1 is distinguishable over the applied art**

As noted above, independent claim 1 is directed to an apparatus that includes a moving contact piece that is driven by a rotating shaft and an electric motor that is driven by a drive shaft. The drive shaft of the electric motor can be coupled to the rotating shaft through a gear mechanism. A first axis of the drive shaft runs parallel to a second axis of the rotating shaft in a common horizontal plane. See Figure below.

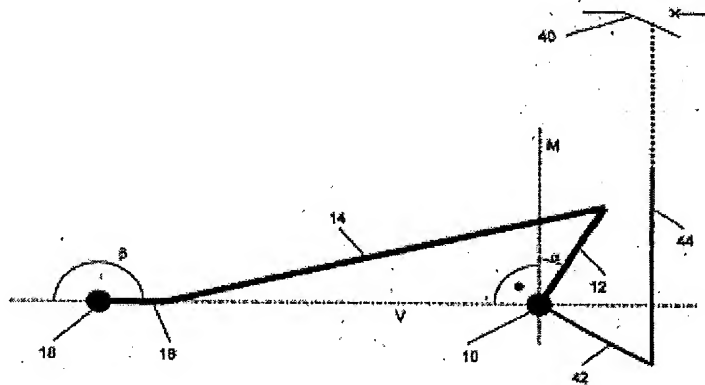


Fig. 1

The prior art as combined by the Examiner does not disclose or suggest the aforementioned features such that the claims are rendered obvious.

The *Marin-Pache* patent discloses an electrical switchgear apparatus having a drive mechanism 12 and three identical breaking modules 14, 16, 18. The drive mechanism 12 includes a pole shaft 32 that is connected to the three breaking modules 14, 16, 18 via a transmission rod 40. The transmission rod 40 is connected to respective double levers 70, 72, 74, which translate the force of rotation of the pole shaft to an associated breaking module 14, 16, 18. The *Marin-Pache* patent discloses that the kinematic system defines no less than five geometric axes of parallel rotation. These axes of rotation are defined as (1) a first axis 140 about which the pole shaft 32 is pivoted; (2) a second axis 142 about which the levers 70, 72, 74 are pivoted; (3) a third axis 144 about which a connecting rod is pivoted with respect to cranks of the pole shaft, (4) a fourth axis 146 about which the connecting

rod pivots with respect to the levers; and (5) a fifth axis 148 about which bars 126 are pivoted with respect to the levers 70, 72, 74. See Figure that follows.

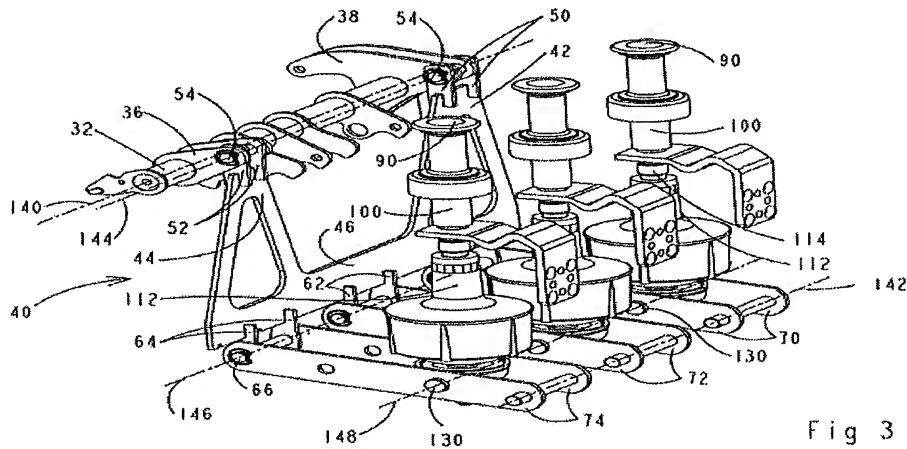


Fig 3

The Byers patent discloses that the geneva gear 108 is supported at its center of rotation 109 by a steel shaft 110 that is supported at its ends by support steel plate 112 on one side and an insulating dial switch panel 114 on the other. The geneva gear 108 is firmly attached to a bar 119 that extends perpendicular to the

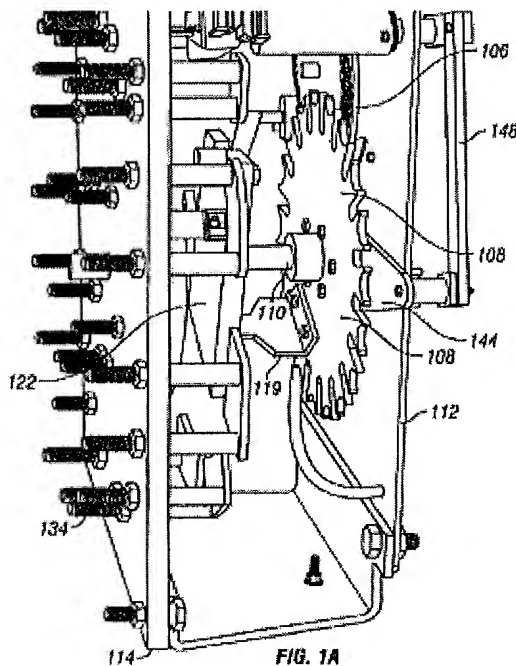
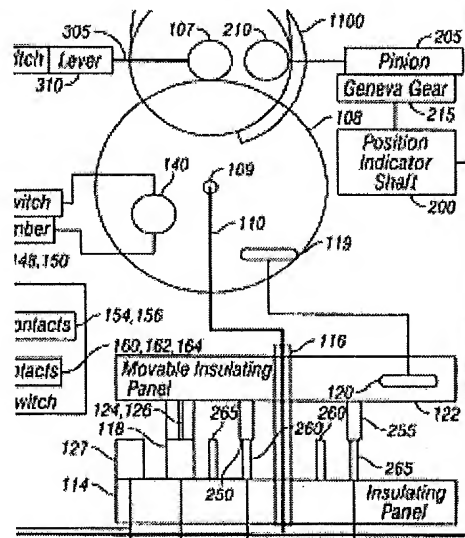


FIG. 1A



plane of rotation of the geneva gear 108. The bar 119 engages a drive slot 120 in the rotary arm, which includes a moveable insulating panel 122. The moveable insulating panel 122 is supported by and rotates around the common steel shaft 110

that supports the geneva gear 108. The insulating panel 122 has the drive slot 120 at one end and at the other end supports two electrical moveable contacts 124, 126. Plural stationary contacts 118 are provided on the dial switch insulating panel 114. Each stationary contact 118 has an end 134 that electrically connects to a tap lead of an electronic control device 136 that receives power from the power source 130 to control an AC value to the load 132. A surface 138 of each stationary contact 118 is engaged by the moveable contacts 124, 126 at a pre-determined sequence. See column 6, line 48 through column 7, line 41.

Based on the guidance give in the *Byers* patent, one skilled in the art would understand that the geneva gear rotates about the shaft 110. The moveable insulating panel 122 is mounted to rotate about the central axis of the shaft 110. The bar 119 is connected between the geneva gear 108 and the moveable insulating panel 122. The bar 119 rotates about the axis of the shaft 110 based on the rotation of the geneva gear 108 and drives the moveable insulating panel 122 to also rotate about the central axis of the shaft 110. Based on the above, one of ordinary skill would understand that the shaft 110, the bar 119, and the moveable insulating panel 122 each rotate about the same axis, which is the central axis of the shaft 110.

The Examiner applies the *Byers* patent to remedy the acknowledged deficiencies of the *Marin-Pache* concerning the use of a motor and gear mechanism to drive the breaker. Appellant, however, disputes the sufficiency of this combination.

The *Byers* patent discloses that the geneva gear is rotated to drive the rotation of the insulating panel about a shaft. The *Marin-Pache* patent discloses each axis serves as point about which a respective component is pivoted. One skilled in the art would understand that the rotation of the geneva gear in the *Byers* patent is far different from the pivoting about an axis as described in the *Marin-Pache* patent. Moreover, because respective components in the *Marin-Pache* patent are designed to pivot about an axis, Appellant submits that incorporating a gear to couple various shafts as described in the *Byers* patent would frustrate the ability of the *Marin-Pache* patent to achieve the desired objective.

The Examiner concedes that neither the *Marin-Pache* nor *Byers* patent discloses or suggests this feature and relies on the teachings of *Weston* as evidence of the knowledge in the art and in an effort to remedy this deficiency.

The *Weston* patent discloses a circuit breaker mechanism having an inner shaft 42a and an outer shaft 22a. An auxiliary shaft, which is 92 used in the process of closing main and vacuum contacts, is spaced from the shaft 22a and mounted for rotation in a housing 88. See *Weston*, col. 5, line 5 thru col. 6, line 8; Figs. 9, 10, 11. The Examiner alleges that the relationship among the shafts 92 and 42a is analogous to the relationship between the first axis of the drive shaft and second axis of the rotating shaft as recited in claim 1. The *Weston* patent, however, does not provide any evidence in the disclosure to support the Examiner's position. This reference provides no discussion regarding the relationship between any of the shafts that would lead one of skill in the art to conclude that a first axis of the drive shaft runs parallel to a second axis of the rotating shaft in a common horizontal plane as recited in Appellant's claim 1.

Even assuming *arguendo* that the *Weston* patent can be reasonably considered to support the Examiner's interpretation, there is still no apparent nexus between the *Weston* patent and the combination of the *Marin-Pache* and *Byers* patents to render the claims obvious. Namely, the alleged feature of the *Weston* patent does not present a mere substitution of parts, but rather a modification of the structural components in the *Marin-Pache/Byers* combination and particularly in the structure of the *Marin-Pache* patent. To realize a feature in which "the first axis of the drive shaft runs parallel to the second axis of the rotating shaft in a common horizontal plane," requires that the *Marin-Pache* be extensively modified. A modification to embody Appellant's claim feature, however, would render the device either incapable of operation or incapable of achieving the stated objective. In other words, while the alleged relationship between shafts 92 and 42 is applicable for the functional design in the *Weston* patent, there is no dispositive or suggestive evidence that supports the applicability of this same relationship in the *Marin-Pache* patent. The mere knowledge of such a relationship as disclosed in the *Weston* patent is insufficient to establish obviousness if the modification would destroy the principal operation of the *Marin-Pache* patent.

If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Moreover, if the proposed modification or combination



of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

The *Marin-Pache* patent discloses a kinematics system defines five geometric axes of parallel rotation. The shafts 140 and 142 are both fixed with respect to the support 83, and the other three shafts (144, 146, 148) are mobile. See *Marin-Pache*, col. 5, lines 45-47. However, based upon a reasonable and prudent reading of the reference, one of skill in the art would understand that no two of the five geometric axes together establish a structure such as Appellant's claimed first axis of the drive shaft and second axis of the rotating shaft, wherein the first axis of the drive shaft runs parallel to the second axis of the rotating shaft in a common horizontal plane.

A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levensgood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). In this instance, other than stating that Appellant's claimed structure is known, the Examiner has not provided objectively reasonable support for why an artisan would modify *Marin-Pache* with the teachings of *Weston* to achieve Appellant's claimed embodiment.

In summary, the combination of the *Marin-Pache*, Byers, and *Weston* patents when applied alone or in combination as alleged by the Examiner fail to disclose or suggest at least all of the features and/or the combination of features recited in Appellant's claims.

**Claims 2-11 and 13-22 are not rendered obvious by the prior art**

Claims 2-11 and 13-22 depend from claim 1. By virtue of this dependency and because of the additional features recited therein the subject claims are distinguishable over the applied art.

For example, each of claims 8 and 16 recite "an intermediate piece, configured as a circular disk, is fixed to the drive shaft of the electric motor, and wherein an end of a connecting rod which faces the drive shaft is connected to said

intermediate piece at one of at least two distances from the first axis of the drive shaft". As discussed above, the *Marin-Pache* patent discloses that respective components pivot about the axis of a shaft. The *Byers* patent discloses that a gear mechanism rotates an insulating panel 360° about the axis of a shaft. Given the noticeable differences between the design objectives of the *Marin-Pache* and *Byers* patents, Appellant submits that one of skill in the art starting with the *Marin-Pache* patent would not have looked to the *Byers* patent to incorporate a gear mechanism to pivot the respective components about a shaft as alleged by the Examiner. The use of a gear in the design of *Marin-Pache* is not needed and would require increased complexity in the number and use of parts in an attempt to achieve a pivoting function as recited in claims 8 and 16. Even still Appellant believes that the gear mechanism cannot be implemented in the *Marin-Pache* patent as alleged.

Moreover, each of claims 9 and 17 recite, "the gear mechanism is in the form of a toothed belt drive". Nothing, however, in the *Marin-Pache*, the *Byers*, or the *Weston* patents provide guidance regarding how the pivoting design of the five axes can be modified to incorporate a toothed belt drive design as recited in claim 9. In fact, Appellant submits that there is not a sufficient nexus between the respective designs of the *Marin-Pache* and the *Byers* patents to render claims 9 and 17 obvious.

#### VIII. Claims Appendix

See attached Claims Appendix for a copy of the claims involved in the appeal.

#### IX. Evidence Appendix

No evidentiary exhibits are provided with this Appeal.

#### X. Related Proceedings Appendix

No related proceedings are associated with this Appeal.

XI. Conclusion

Appellant has pointed to errors in the rejection of the claims. Appellant respectfully requests that the final rejection be reversed and the application be returned to the Examiner for prompt allowance.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date September 20, 2010

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## VIII. CLAIMS APPENDIX

### The Appealed Claims

1. An apparatus for actuating an electrical switching device high-voltage power breaker having at least one moving contact piece, the at least one moving contact piece being driven via a rotating shaft that rotates about a first axis, wherein an electric motor having a rotating drive shaft that rotates about a second axis, which can be coupled to the rotating shaft for the switching device by means of a gear mechanism, is provided for the purpose of driving the rotating shaft to switch the switching device high-voltage power breaker on and off,

wherein the first axis of the drive shaft runs parallel to the second axis of the rotating shaft in a common horizontal plane.

2. The apparatus as claimed in claim 1, wherein, in the case of multi-pole, switching devices, an electric motor is provided for the purpose of driving all of the switch poles.

3. The apparatus as claimed in claim 1, wherein, in the case of multi-pole, switching devices, a separate electric motor is provided for the purpose of driving each switch pole.

4. The apparatus as claimed in claim 1, wherein the first axis of the drive shaft runs parallel to the second axis of the rotating shaft.

5. The apparatus as claimed in claim 1, wherein the electric motor is a servomotor.

6. The apparatus as claimed in claim 1, wherein the gear mechanism is a lever mechanism.

7. The apparatus as claimed in claim 6, wherein the lever mechanism is dimensioned such that a rotation of the drive shaft of the electric motor through at most 180° brings about a switching operation of the switching device.

8. The apparatus as claimed in claim 6, wherein an intermediate piece, configured as a circular disk, is fixed to the drive shaft of the electric motor, and wherein an end of a connecting rod which faces the drive shaft is connected to said intermediate piece at one of at least two distances from the first axis of the drive shaft.

9. The apparatus as claimed in claim 1, wherein the gear mechanism is in the form of a toothed belt drive.

10. The apparatus as claimed in claim 9, wherein the toothed belt drive has a transmission ratio of 1:1 to 1:6.

11. A switching device having at least one apparatus for actuating purposes as claimed in claim 1.

13. The apparatus as claimed in claim 1, wherein the electric motor is a servomotor.

14. The apparatus as claimed in claim 13, wherein the gear mechanism is a lever mechanism.

15. The apparatus as claimed in claim 14, wherein the lever mechanism is dimensioned such that a rotation of the drive shaft of the electric motor through at most 180° brings about a switching operation of the switching device.

16. The apparatus as claimed in claim 15, wherein an intermediate piece configured as a circular disk, is fixed to the drive shaft of the electric motor, and wherein an end of a connecting rod which faces the drive shaft is connected to said intermediate piece at one of at least two distances from the first axis of the drive shaft.

17. The apparatus as claimed in claim 2, wherein the gear mechanism is in the form of a toothed belt drive.

18. The apparatus as claimed in claim 17, wherein the toothed belt drive has a transmission ratio of 1:1 to 1:6.

19. A switching device having at least one apparatus for actuating purposes as claimed in claim 18.

20. A switching device having at least one apparatus for actuating purposes as claimed in claim 16.

21. The apparatus as claimed in claim 9, wherein the toothed belt drive has a transmission ratio of 1:3.5.

22. The apparatus as claimed in claim 17, wherein the toothed belt drive has a transmission ratio of 1:3.5.

## **IX. EVIDENCE APPENDIX**

No evidentiary exhibits are provided with this Appeal.

## **X. RELATED PROCEEDINGS APPENDIX**

No related proceedings are associated with this Appeal.